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of Glacial Sand Plains." "Glacial Features of Parts of the Yukon and Mackenzie Basins" was the title of the paper submitted by Professor R. G. McConnell of Ottawa, Canada. Professor J. B. Tyrrell of Ottawa, Canada, read a paper on the "Post-Tertiary Deposits of Manitoba and the Adjoining Territories of Canada." Professor G. Frederick White of Oberlin College, Ohio, followed with a paper on "Terminal Moraine in Ontario;" Professor W. J. McGee of Washington, one on the "Southern Extension of the Appomattox Formation;" and Professor Charles D. Walcott of Washington defined the value of the term "Hudson River Group" in geologic nomenclature.

At the concluding sessions on Dec. 28 the number of speakers was so large that a general curtailment was necessary, and papers were withdrawn by the following members: Joseph P. Iddings and George H. Eldridge, Washington, D.C.; C. R. Van Hise, Madison, Wis.; Frank L. Nason, New Brunswick, N.J.; W. O. Crosby; Professor J. E. Wolff of Harvard University; Professor J. F. Kemp, Cornell University; F. J. H. Merrill, New York; H. M. Crump, Persifer Frazer, E. D. Cope, Philadelphia; and Peter McKellar, Ontario.

The paper which provoked the most discussion was read by Professor Alexander Winchell of Michigan University, Ann Arbor, the title of which was "Some Results of Archæan Studies." Those who took part in the discussion were Professor C. H. Hitchcock of Dartmouth, Professor Emerson of Amherst, Professor A. C. Lawson of Ottawa, Canada, and Professor C. R. Van Hise of Madison, Wis.

The first paper of the day was read by Professor H. S. Williams of Cornell, who set forth a new method of illustrating the relation of the history of different regions by graphic representation of the oscillation of sediments, and urged the study of fauna to bring out the relation of local fauna to their ancestors.

Professor G. H. Williams of Johns Hopkins University exhibited and described some specimens highly metamorphosed, but still containing fossils, collected in Norway. C. D. White of Washington claims to have found fossils showing rock on Martha's Vineyard to be middle cretaceous in place of middle tertiary, as supposed. J. S. Diller of Washington projected upon the screen photographs of dikes in California. In some cases the dikes were five feet wide and twenty feet high. Professor A. S. Richmond then projected some Alaskan views, and a diagram of the buildings that would be erected on the museum ground for the world's fair of 1892.

Professor C. H. Hitchcock of Dartmouth read an interesting paper on "Granitoid Oval Areas in the Laurentian," and Professor B. K. Emerson of Amherst spoke on "Porphyritic Granite." Professor A. C. Lawson of Ottawa read a paper on the "Archæan of Central Canada." Then followed papers by Professor Warren Upham, President James Hall, and F. J. H. Merrill.

The next meeting of the society will be in Indianapolis, Ind., August, 1890.

BOOK-REVIEWS.

Scientific Papers of Asa Gray. Selected by CHARLES SPRAGUE SARGENT. 3 vols. Boston and New York, Houghton, Mifflin, & Co. 8°. \$3 per vol.

THE general public will, we are sure, be much surprised to learn that Professor Gray was so voluminous a writer as these volumes show him to be. Indeed, Mr. Sargent, in his introduction, states that his contributions to science were so numerous and varied as to astonish those of his associates who were most familiar with his intellectual activity, his various attainments, and that surprising industry which neither assured position, the weariness of advancing years, nor the hopelessness of the task he had imposed upon himself, ever diminished. His first scientific paper was published in 1834, and his last was written in 1887, but a few weeks before his death. During this half-century it may truly be said that his pen was never idle. In the selection of Professor Gray's writings for republication, Mr. Sargent omits those contributions which are devoted to descriptive botany, and many of which form the best textbooks in the English language; nor does he attempt to reproduce the philosophical essays which grew out of the discussion of the

Darwinian theory. Reviews, biographical notices, and a few essays upon subjects of general interest to botanists, all of which have long been out of print, form the greater part of the volumes before us. It was doubtless a most difficult task to select from so much material that which was most desirable to publish. More than eleven hundred bibliographical notices and reviews, all of them from the hand of such a critic as Asa Gray, must indeed have been an *embarras de richesses*. Mr. Sargent's plan has been to present in his selection, as far as possible, a history of the growth of botanical science during a period which has been marked by the gradual change of ideas among naturalists upon the origin and fixity of the species which has broadened the field of all biological investigation, by the establishment and systematic arrangement of vast herbaria gathered from all parts of the world, by the introduction of improved and more philosophical methods of investigation in the laboratory, and by the growth of popular appreciation for the value of scientific training. The task which Mr. Sargent set out for himself was a most arduous one; but so well has he performed it, that the whole scientific world has been made his debtor. The future reputation of Asa Gray will be enhanced by the presentation of his writings; and the editor of them will always have the satisfaction of knowing that he has in no inconsiderable degree assisted in preserving the lustre of the name of Asa Gray.

AMONG THE PUBLISHERS.

ON Saturday, Feb. 1, 1890, the Illustrated American Publishing Company (New York) will issue the first number of a weekly news magazine, which, it is claimed, will "rival the most artistic periodicals of England, France, and Germany, and surpass those produced in this country." The illustrations will be the picturesque chronicling of contemporaneous history. A colored supplement will be the most conspicuous feature of every number. It will be a facsimile, in color, of the masterpiece of some celebrated painter, in the preparation of which the discoveries in the art of reproduction will be employed. *The Illustrated American* is designed for the home. It will be unsectarian, and free from political discussions and heavy debates. The serial novel and short stories will be illustrated, and other matter will be selected to afford amusement, entertainment, and valuable information.

— *St. Nicholas* for January is a second Christmas number. Walter Camp's foot-ball paper deals with the great games at the Polo Grounds, and is re-enforced by a study of "The Drop-Kick," contributed by Yale's famous expert, W. T. Bull, whose kicks won Yale a championship. A story of New-Mexican life, by Charles F. Lummis, gives the legend of the now inaccessible "Enchanted Mesa," upon which, tradition says, there is a deserted village just as it was left hundreds of years ago. A photograph of the mesa from nature is one of the illustrations.

— Messrs. Macmillan & Co. will shortly publish the first part of Professor Eimer's work on "Organic Evolution as the Result of the Inheritance of Acquired Characters according to the Laws of Organic Growth," translated by J. T. Cunningham, M.A., F.R.S.E., late fellow of University College, Oxford, England.

— After Mr. Gladstone, Pope Leo XIII. is the most vigorous man of his age of the day, says Edward W. Bok, in the January *Ladies' Home Journal*. The routine of his work would kill an ordinary man. There is no detail too small for him to pass over; and from daybreak until after midnight he devotes his time to the church and literature. Those who surround him know when he is particularly tired or worn out, for then he takes down a volume of Dante, and reads with the avidity of a school-girl enjoying her first novel. Of all the authors, Dante is the Pope's favorite, and it has been remarked that in physique he is not unlike the accepted idea of that great Italian. He reads Dante for pleasure; but, for keeping himself well informed on all that is happening out of the church as well as in it, he reads not only American books, but newspapers and magazines; and it may surprise American readers to know that he is well informed on all the topics of the day, political, religious, and social. He has taken a deep interest in the cause of labor in the United States, and reads every thing bearing on that

subject which comes to hand. Once a week a well-selected bundle of American newspapers is sent to the Vatican; and the Pope and those that surround him know not only what is going on in the United States, but they are familiar with the calibre and character of the men who make laws and enforce them. It is so in England also. In addition to his correspondence in the British Empire, he follows with eager interest the reports in the various newspapers, not only of the doings of Parliament, but of royalty as well, the progress of the church, and the cause of labor. Much the same plan is followed in Germany; in fact, from every corner of the world each week is sent to the Holy Father newspapers, books, and magazines containing important discussions. A great many of these are filed away for future reference. The books that interest Leo the most are those of a religious, political, and philosophical nature. He cares nothing for fiction, and rarely spends an hour in glancing at novels; but if he should like to read novels, or, in fact, books of any kind, he has only to walk into the magnificent library attached to the Vatican, for there is not a mail arriving in Rome that does not bring books of all sorts of types from all sorts of authors and publishers. A great many of these the Pope never sees, and many of them are sent to the cardinals who surround him for an opinion of their merits or demerits. But it may be said, taking it all in all, that the Pope has as wide a field to select from as, if not wider than, any man in Europe; and he resembles Mr. Gladstone in this, that he is quite willing to spend an hour or more with a magazine or book, if in the end he can find something that is worth remembering. He has a wonderful memory, and, although his eyes are dimmed and his hand trembles, he is still as vigorous mentally as he was when he was elected to succeed Pius IX.

—Part V. of the "New English Dictionary," edited by Dr. Murray, has just appeared from the Clarendon Press. It comprises the words from "cast" to "clivy," and contains, in all, 8,371 words, of which 5,966 are "main words." It comprises all the words beginning with *ch*, which, as the editor remarks, "contains more words than *j*, *k*, or *q*, and more than *x*, *y*, and *z* put together." Many of the words here dealt with have an interesting form-history, which is treated with the same fulness and accuracy that have characterized all previous work of the kind in this dictionary. The verb "cast" fills five pages,—the largest space required by any word yet reached; and the other strong verbs, of which the present instalment contains quite a number, are treated with similar fulness. The scientific terms comprise the important groups beginning with "cerebro-," "chalco-," "chiro-," "chloro-," together with many others. One of the most interesting features of this part of the dictionary is the large group of words relating to the Christian church, including "Christ" and its derivatives, "church," "catholic," "clergy," "cherub," and many more, all of which are treated with great fulness of detail and wealth of illustration. It is somewhat singular that the origin of "church" is still uncertain, the derivation from Greek, *κυριακή*, meaning "of the Lord," which the editors adopt, being admittedly uncertain. The system of spelling and pronunciation adopted in the dictionary, though not always such as we should prefer, is in the main judicious, and remarkably free from hobbies. To criticise such a work as this would require almost as great a combination of talents and information as has been employed in its preparation, while to praise it is superfluous; and we will therefore commend it anew to our readers without further comment.

—The January *Magazine of American History* opens its twenty-third volume. A portrait of William Cullen Bryant forms the frontispiece, and a paper by the editor treats of his place in American history. "A Rare Picture of Early New York," painted on the panel of an old Dutch war-vessel, a view never before published, is a contribution from the collector Dr. Thomas Addis Emmet. "Uncle Tom's Cabin and Mrs. Stowe," an extract from the new work of Mrs. McCray, is entertaining, and is also illustrated; then from Hon. J. O. Dykman there is a sketch of "St. Anthony's Face" on the Hudson, with a picture of that piece of natural sculpture. Of interest for every thoughtful reader is the study, by Hon. Gerry W. Hazleton of Milwaukee, entitled "Federal and Anti-Federal;" next following, Hon. James W. Gerard shows, in the longest paper of the number, "The Impress of Nationalities upon

the City of New York." A paper, "Ralph Izard, the South Carolina Statesman," comes from the pen of Dr. Manigault of Charleston, which, with "American Republics—Their Differences," by George W. Pavey, completes the group of contributions.

—The January issue of *The Quarterly Journal of Economics*, published for Harvard University, will contain articles by Professor Hart of Harvard, on American cities, discussing their rise, the causes of their growth, their population, the foreign element; by Professor Hadley of Yale, on the effects of the prohibition of pools by the Interstate Commerce Act; by Professor Giddings of Bryn Mawr, on the theory of interest, a solid contribution to economic theory; by E. Cummings, describing the exhibition on social subjects at the Paris Universal Exposition; and by A. de Foville of Paris, on the economic movement in France, the revival of the protectionist feeling, and the legislation on railroads. In addition, there will be varied notes and memoranda, and the usual bibliography of recent economic publications.

—E. & F. N. Spon have just issued a third edition of "Brown's Manual of Assaying Gold, Silver, Copper, and Lead Ores," by Walter Lee Brown, B.Sc., thoroughly revised and corrected. This manual is a 12mo of 488 pages, with 94 illustrations, colored plate, and flexible covers. It is devoted to the assaying of the ores of the four metals mentioned, but principally to those of gold and silver. Every step is clearly defined, from the crushing of the rough ore to the weighing of the final particle of gold obtained. The important features of this, as compared with the first edition, are, increase in matter and illustrations; the expansion of the crucible process to almost ninety pages; full charges in the scorification process; detailed notes on the colors of scorifiers (with a colored plate) and cupels, after work; the stating of all charges in assay tons, grams, and grains; and more complete articles on the assay of gold and silver bullion, and volumetric analysis of copper ores. The book is a practical treatise, free from technicality, and as such will be of value to every one interested in mining or assaying, whether an expert or an investigator.

—We have received from C. W. Bardeen of Syracuse, N.Y., a series of "Papers on School Issues of the Day," Nos. I.—VII. They were originally read at the meeting of the National Educational Association at Nashville, Tenn., last July, and contain much interesting matter. The largest of the pamphlets, and the one most likely to attract attention, is that on "Denominational Schools," being a discussion by Cardinal Gibbons and Bishop Keane of the Roman Catholic Church on the one side, and Edwin D. Mead and John Jay on the other. The ablest part of the discussion, in our opinion, is the essay by Mr. Mead, who has evidently given the subject a good deal of thought and study; but the Roman Catholic view of the subject was ably presented by Bishop Keane, and there are many points of interest in Mr. Jay's paper. All persons interested in the subject should read this pamphlet. The two next of the papers before us are by William T. Harris, on "The Educational Value of Manual Training," and on "Art Education the True Industrial Education." The former is the report of a committee appointed at a previous meeting of the Educational Association, of which Mr. Harris was chairman. It deals but little with the economic aspects of manual training, and treats of its educational or disciplinary value only, which it deems of a low order. The paper on "Art Education" is the work of Mr. Harris himself, and insists on the importance of artistic training of a high order, even for industrial purposes. The paper on "Methods of Instruction and Courses of Study in Normal Schools," by Thomas J. Gray, is largely technical, and therefore of less general interest than some of the others; but it was highly commended by those who listened to it. B. A. Hinsdale discussed the subject of "Pedagogical Chairs in Colleges and Universities," maintaining the importance of such chairs and their appropriateness in such institutions. The last of our pamphlets is by Charles Foster Smith, on "Honorary Degrees as conferred in American Colleges." The author shows that such degrees are now conferred without regard to merit or achievement, and rightly holds this to be a pernicious practice; but he has little that is new to suggest in the way of remedy. All these papers give evidence of the recent awakening of thought in this country on educational themes.

—“Beneath Two Flags,” by Maud B. Booth, just published by Funk & Wagnalls, New York, is partly an explanation, and partly a vindication, of the Salvation Army. The author is the wife of Marshal Booth, who is the son of Gen. William Booth, founder and leader of the whole movement.

—*The Sidereal Messenger* is devoted wholly to astronomy, and is issued monthly except for July and August. It is announced that it will hereafter contain articles in each number from “some of the best American and English astronomers, with expensive illustrations when desirable or necessary.” Most of these articles will be in popular language, and adapted to the wants of scholars in other lines of scientific research. The article in the December, 1889, number by Professor Asaph Hall, United States Naval Observatory, Washington, D.C., entitled “The Resisting Medium in

Space,” though necessarily somewhat mathematical in form, is an admirable presentation of the present state of knowledge on this important theme. The feature of “Current Celestial Phenomena” will be “kept full, timely, and interesting.” The addition of “Astronomical Bibliography” will be “a feature that all scholars will prize.” “The Astronomical News and Notes” will be in the future “more varied and general, aiming to give as complete a history of astronomical work and progress as can be secured from month to month.” The attention of all interested in astronomical science is called to this publication as adapted to the wants of (1) those who are teachers or students of astronomy; (2) those in charge of astronomical observatories; (3) those in charge of reading-rooms, and of all public and private libraries. It is published by William W. Payne, Carleton College Observatory, Northfield, Minn.

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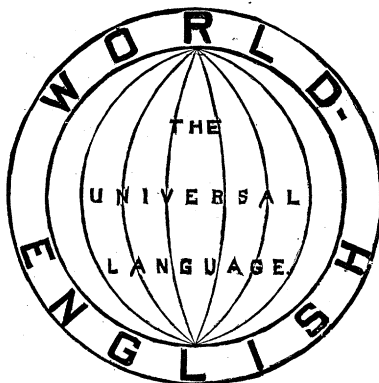
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